

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A method for abatement of insoluble volatile organic compounds (VOC) in an exhaust gas stream originating from a reactor, the method comprising that comprises:
providing inputting a spray of water droplets or water film;
partially oxidizing insoluble organic compounds by passing an exhaust gas stream through pulsed corona discharges in the presence of the spray of water droplets or water film to form one or more partial-oxidation products that are soluble in the water spray droplets or film thereby creating an effluent water stream and an effluent gas stream, wherein
 - (a) said pulsed corona discharges are pulsed at a rate of about 0.01 to about 2 kHz,
 - (b) ~~the ratio of the water spray rate or water film rate to the exhaust gas flow is about 0.2 to about 2 milliliters/minute at one standard liter per minute of exhaust gas flow,~~ and
 - (c) an electrical energy expenditure of not more than 50 eV per molecule of VOC is utilized; andcontrolling the rate of flow of the water droplets or the water film so that the ratio of the flow of spray of water droplets or water film to the exhaust gas flow is about 0.2 to about 2 milliliters/minute at one standard liter per minute of exhaust gas flow.
2. (Previously presented) The method according to claim 1 wherein said exhaust gas stream is passed through said pulsed corona discharges in the presence of a spray of water droplets.
3. (Previously presented) The method according to claim 1 wherein said pulsed corona discharges are pulsed at a rate of about 0.1 to about 1 kHz.
4. (Original) The method according to claim 1 wherein said exhaust gas stream contains about 60 to about 6000 ppm VOC.

5. (Original) The method according to claim 1 wherein said exhaust gas stream is that produced from a process selected from the group consisting of papermaking, metal cleaning or plating, paint manufacturing, plastics manufacture, petroleum refining and dye-making.

6. (Currently amended) A method for abatement of volatile organic compounds (VOC) in an exhaust gas stream originating from a reactor the method comprising that comprises passing an exhaust gas stream produced from a process selected from the group consisting of papermaking, metal cleaning or plating, paint manufacturing, plastics manufacture, petroleum refining, cooking and dye-making and contains ~~about~~ 60 to ~~about~~ 6000 ppm VOC through a pulsed corona discharge chamber in the presence of a spray of water droplets to form one or more oxidation products that dissolve in the water spray droplets and provide an effluent water stream and an effluent gas stream, wherein

(a) ~~said pulsed corona discharges are pulsed at a rate of about 0.01 to about 2 kHz,~~

(b) ~~the ratio of the water spray rate or water film rate to the exhaust gas flow is about 0.2 to about 2 milliliters/minute at one standard liter per minute of exhaust gas flow,~~ and

(c) ~~an electrical energy expenditure of not more than 50 eV per molecule of VOC is utilized; and~~

controlling the rate of flow of the water droplets or the water film so that the ratio of the flow of spray of water droplets or water film to the exhaust gas flow is about 0.2 to about 2 milliliters/minute at one standard liter per minute of exhaust gas flow.

7. (Original) The method according to claim 6 wherein said method is carried out at an exhaust stream temperature of about 40° C. to about 65° C.

8. (Original) The method according to claim 6 wherein said exhaust stream contains about 200 to about 4200 ppm VOC.

9. (Original) The method according to claim 6 wherein said exhaust stream is produced from a papermaking process.

10. (Currently amended) A method for abatement of volatile organic compounds (VOC) in an exhaust gas stream originating from a reactor the method comprising that comprises passing an exhaust gas stream ~~at a temperature of about 40° C. to about 65° C.~~ produced from a papermaking process that contains about 200 to about 4200 ppm VOC through a pulsed corona discharge chamber in the presence of a spray of water droplets to form one or more oxidation products that dissolve in the water spray droplets and provide an effluent water stream and an effluent gas stream, wherein

(a) ~~said pulsed corona discharges are pulsed at a rate of about 0.01 to about 2 kHz,~~

(b) ~~the ratio of the water spray rate or water film rate to the exhaust gas flow is about 0.2 to about 2 milliliters/minute at one standard liter per minute of exhaust gas flow,~~ and

(c) ~~an electrical energy expenditure of not more than 50 eV per molecule of VOC is utilized; and~~

controlling the rate of flow of the water droplets or the water film so that the ratio of the flow of spray of water droplets or water film to the exhaust gas flow is 0.2 to 2 milliliters/minute at one standard liter per minute of exhaust gas flow.

11. (Original) The method according to claim 10 wherein said exhaust stream contains about 300 to about 3000 ppm VOC.

12. (Canceled)

13. (Original) The method according to claim 10 wherein said papermaking process is brownstock or oriented strandboard production.

14. (Original) The method according to claim 10 including the further step of admixing the effluent water stream containing oxidized VOC with another waste water stream.

15. (Original) The method according to claim 10 wherein the water of said water spray is provided from waste water of said papermaking process.